Sampling and Analysis Plan

for the
Turkey Brook Site
Oakville, Litchfield County, Connecticut

Conducted under:

Emergency Planning and Response Branch
Generic Program Quality Assurance Project Plan
March 22, 2004

Prepared by:

Weston Solutions, Inc.
Region I
Superfund Technical Assessment and Response Team III (START)
November 2013

Approved by:

_____ Date _____
U.S. EPA New England On-Scene Coordinator

Projected Dates of Sampling: 20 - 22 November 2013
CERCLA Site/Spill Identifier No.: OPAZ1D7
Contractor Organization: Weston Solutions, Inc.
Contract Name: START
Contract Number: EP-W-05-042
Technical Direction Document No.: 01-13-09-0009
Document Control No.: R-7543

Preface and Instructions

This Sampling and Analysis template will be used to develop site-specific Sampling and Analysis Plans (SAPs) in conjunction with the *U.S. Environmental Protection Agency (EPA) New England Emergency Planning and Response Branch Generic Program Quality Assurance Project Plan (Generic EPRB QAPP).* The SAP will describe technical and quality control activities specific to the data collection operation, and will refer back to the *Generic EPRB QAPP* for routine technical and quality assurance procedures that will be employed.

The user should incorporate previously developed planning documents such as work plans and Statements of Work (SOWs) directly into the SAP to facilitate its development and to preclude redundancy of effort.

A copy of the SAP will be filed in the site file. Also, a copy of the SAP may be forwarded to the Regional Sample Coordinator at the Office of Environmental Measurement and Evaluation (OEME) instead of the Data Quality Objectives (DQO) Summary Form.

Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
AST	Aboveground Storage Tank
bgs	Below Ground Surface
CGI	Combustible Gas Indicator
COC	Contaminant of Concern
CT DEEP	Connecticut Department of Energy & Environmental Protection
DQO	Data Quality Objectives
EDRO	Extended diesel range organics
EPA	Environmental protection Agency
EPRB	Emergency Planning and Response Branch
ERRS	Emergency Response Rapid Services
FID	Flame Ionization Detector
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NCP	National Contingency Plan
NRC	National Response Center
OEME	U.S. EPA New England Office of Environmental Measurement and Evaluation
OSC	On-Scene Coordinator
PAH	Polycyclic Aromatic Hydrocarbon
PE	Performance Evaluation
PID	Photoionization Detector
ppm	Parts per million
PVC	Polyvinyl Chloride
PRP	Potentially Responsible Party
QA	Quality Assurance
QAI	Quality Automatics, Inc.
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	Quality Control
QL	Quantitation Limit
RAL	Removal Action Level
RSCC	Regional Sample Control Coordinator
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
SOW	Statement of Work
START	Superfund Technical Assessment and Response Team
TPH	Total Petroleum Hydrocarbons
Weston	Weston Solutions, Inc.

SAMPLING AND ANALYSIS PLAN
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2.0 Introduction

This SAP identifies the data collection activities and associated quality assurance/quality control (QA/QC) measures specific to the Turkey Brook Site (the site), located in Oakville, Litchfield County, Connecticut. All data will be generated in accordance with the quality requirements described in the *EPRB Generic QAPP,* dated March 22, 2004. The purpose of this SAP is to describe site-specific tasks that will be performed in support of the stated objectives. The SAP will reference back to the QAPP for generic tasks common to all data collection activities including routine procedures for sampling and analysis, sample documentation, equipment decontamination, sample handling, data management, assessment and data review. Additional site-specific procedures and/or modifications to procedures described in the *EPRB Generic QAPP* are described in the following SAP elements.

This SAP is prepared, reviewed and approved in accordance with the procedures detailed in the *EPRB Generic QAPP*, Section 3. Any deviations or modifications to the approved SAP will be documented using SAP Table 1, SAP Revision Form.

3.0 and 4.0 Project Management and SAP Distribution

Management of the site will be as documented in the *EPRB Generic QAPP*. Refer to the *Generic EPRB QAPP* for organizational chart, communication pathways, personnel responsibilities and qualifications, and special personnel training requirements.

4.1 Project Team Members List

The following personnel will be involved in planning and/or technical activities performed for this data collection activity. OSC Mike Nalipinski will receive a copy of the approved SAP.

Mia Pasquerella	EPA On-Scene Coordinator (OSC)
Eric Ackerman	Weston Solutions, Inc. (WESTON®) Superfund Technical Assessment and Response Team (START) Project Leader
George Mavris	WESTON®, START Site Leader/Quality Assurance Officer (QAO)
John Burton	START (Lead) Chemist

4.2 SAP Distribution List

Each person listed below may receive a copy of the approved SAP. A copy of the SAP will also be retained in the site file.

Mia Pasquerella	EPA OSC
Eric Ackerman	START Project Leader
John Burton	START Lead Chemist

5.0 Planning and Problem Definition

5.1 Problem Definition

The Turkey Brook Site (the site) is located at 20 McLennan Drive, Oakville, Connecticut (see Appendix A, Figure 1). The approximate geographic coordinates, as measured from the approximate center of the site, are 41° 35' 54.01" north latitude and 73° 04' 32.00" west longitude. Due to various oil releases at the facility over time, there is currently a layer of oil on top of the groundwater underneath the facility. This is causing oil to escape out of the banks of Turkey Brook resulting in sheen on the water. Currently, there is no system in place to collect the oil from the groundwater.

The objectives of this sampling event are to conduct additional sampling investigations to characterize the horizontal and vertical extents of contamination, to determine if any additional source areas of contamination exist, and determine if further actions may be required at the site.

5.2 Site History and Background

The site building is occupied by Quality Automatics, Inc. (QAI), an active automotive parts manufacturing business. The business is operating on the property as a tenant. The site is bordered by Turkey Brook and various industrial properties to the west, by McLennan Drive to the north, by industrial properties to the east, and by residential properties and businesses to the south. Turkey Brook is a navigable waterway which flows south into Steele Brook. Steele Brook flows to the southeast and enters the Naugatuck River.

On 31 August 2012, an oil sheen was observed in Turkey Brook, in an area located between QAI to the east and Rintec Corporation to the west, and reported to the Connecticut Department of Energy & Environmental Protection (CT DEEP). CT DEEP responded to the scene and conducted an investigation of the release. Upon arrival, CT DEEP deployed absorbent oil booms to mitigate further impact from the spill. The CT DEEP responder and the CT DEEP Site Assessment and Support Unit performed a subsurface investigation to determine the source of the oil released. Extended diesel range organics (EDRO) analysis from a soil sample indicated a concentration of 932 milligrams per kilogram (mg/Kg) and from a groundwater sample indicated a concentration of 1,272,000 micrograms per liter (µg/L). CT DEEP personnel were able to confirm that the oil released was coming from oil floating on top of the groundwater which was migrating from beneath the building occupied by QAI.

Following the subsurface investigation, CT DEEP met with the owner of the business and toured the facility to observe on-site operations. While observing the operations at the facility, a 55-gallon drum was knocked over by an employee. The employees promptly cleaned up the spill by sweeping the oil into a corner of the building, then applying Speedi-dri®. The CT DEEP representative expressed concern regarding their clean-up procedures and investigated the area where the oil and oily debris were stored. The CT DEEP representative noticed a gap between the floor and the wall which could provide a pathway for the oil to migrate into the soil and into the groundwater. It was determined that this clean-up procedure had been in place for some time and that the amount of oil that had been released over time was unknown. The operations and oil storage in the area appeared to be contributing to the problem via a cracked oil hose that was leaking product onto the floor in

this same area. The owner of QAI assumed responsibility for the release and agreed to implement clean-up and remediation actions with CT DEEP providing agency oversight.

On 9 October 2012, the potentially responsible party (PRP) contacted CT DEEP and notified them that he was financially unable to continue clean-up actions at the site. CT DEEP responded to the site and noticed a visible sheen on the water. CT DEEP called the National Response Center (NRC) to report the incident and assumed control of the response. They proceeded to deploy absorbent booms and conduct clean-up actions. Clean-up actions consisted of continual replacement of absorbent booms in three locations on Turkey Brook and the installation of an oil recovery system. The oil recovery system included two wells with an oil sensor and a pump which pumped oil off of the surface of the groundwater when the sensor was triggered. This system collected approximately 250 gallons of oil.

On 25 July 2013, CT DEEP requested assistance from the U.S. Environmental Protection Agency (EPA) with the source removal actions implemented at the site. EPA and CT DEEP personnel conducted a site walk on 21 August 2013 and observed an oil sheen on the water that was being contained by absorbent booms. The absorbent booms in two of the three deployment areas were completely saturated and potentially contributing to the current sheen. The water level of Turkey Brook was observed to be low, providing a conduit for additional oil to be released from the banks of the brook. EPA and CT DEEP personnel met with the tenant and property owner, and the owner and tenant provided verbal confirmation to allow EPA to assume responsibility of the clean-up actions due to a lack of funds and resources from both the PRP and CT DEEP.

On 22 August 2013, the OSC initiated an emergency action to remediate the visible sheen on Turkey Brook and to prevent additional oil from further migrating and contaminating areas downstream from the site. Emergency response actions will be initiated by the OSC due to the substantial threat of a discharge from the saturated absorbent boom and the oil sheen on the water. The activities will consist of mobilizing appropriate personnel, equipment, utilities, and supplies; removing oil-contaminated booms from Turkey Brook and replacing them with clean absorbent booms; removing any visible oil sheen from Turkey Brook using appropriate absorbent material; storing any oil or oily debris collected in appropriate containers on site in a secure location; marking containers for identification and disposal; and ensuring that the stored drums are secure and do not continue to pose a substantial threat of a discharge to Turkey Brook.

An on-site reconnaissance was conducted by Weston Solutions, Inc., Superfund Technical Assessment and Response Team (START) on 9 October 2013. Features on the site included a one-story building, paved parking lot in front of the building, grassy areas, seven monitoring wells, and several catchbasins. The building is comprised of two main rooms: one large room measuring approximately 80 feet x 100 feet, and another room measuring approximately 30 feet x 80 feet. A machine shop is located in the larger room, while the smaller room was used as a storage room. One large aboveground storage tank (AST) and a smaller (275-gallon) AST were observed in the northwest and southwest corners and of the machine shop, respectively (see Photo-Documentation Log). The floor of the machine shop was covered with Speedy-Dri®.

Continuous air monitoring was conducted with the MultiRAE and radiation meter throughout the on-site reconnaissance. A maximum reading of 27 parts per million (ppm) was recorded for volatile organic compounds (VOCs) on the MultiRAE, while the radiation meter was 8 microR/hour, while

walking through the machine shop. No readings above background levels were recorded outside of the building during the on-site reconnaissance.

The following monitoring wells/piezometers were observed outside of the backdoor of the facility: two monitoring wells constructed of 4-inch-diameter polyvinyl chloride (PVC) with steel outside protective casings; two monitoring wells constructed of 2-inch-diameter PVC; and two piezometers/monitoring wells constructed of 0.5-inch-diameter PVC. A T-shaped vent pipe, constructed of PVC, was also noted in this area. A water level meter and oil/water interface probe were not available at this time; therefore, the depths of the monitoring wells and piezometers, depth to water, and oil thickness (if any) were not recorded. One absorbent oil boom was observed in Turkey Brook near the monitoring wells. No oil or sheen were noted upstream of this boom.

A prominent sheen was noted in the water of Turkey Brook upgradient of a boom located on the north side of the road. A fill and vent pipe leading into the 275-gallon AST was noted, and a second vent pipe leading into the large AST was noted protruding from the building wall in the vicinity of the monitoring wells. Four roof drain pipes are located along each side (east and west) of the building.

The banks of Turkey Brook were stabilized by a series gabions, approximately 2 feet wide. Three 55-gallon drums containing used oil booms were located against the building wall near the monitoring wells, and 18 55-gallon drums containing used oil booms were located against the chain-link fence near the southwestern corner of the building.

A blue pipe and a black pipe, oriented parallel to McLellan Road and crossing Turkey Brook, were observed from the south side of McLellan Road over Turkey Brook. As the water in Turkey Brook flowed south beneath and past these pipes, it flowed against a concrete wall along the property line of the QAI facility located at 15 McLellan Road.

Currently, there is no system in place to separate and collect the oil from the groundwater. On-site operations (machine shop) at the facility are scheduled to be moved from the current location at 20 McLellan Drive to the facility located across the street (south) at 15 McLellan Drive.

A second on-site reconnaissance was conducted by START, EPA, ERRS, CT DEEP Contractor on 25 October 2013. Six relatively new booms were observed and a sheen was noted upstream of some of the booms in Turkey Brook along the northern side of McLellan Drive. A prominent sheen was also noted in the water on the south side of McLellan Road where the surface water in Turkey Brook flowed against the concrete wall along the property line of the QAI facility located at 15 McLellan Road.

The team entered the machine shop and back room where the oil spill occurred to observe potential boring locations. A maximum reading of 107 ppm was recorded for VOCs on the MultiRAE. The team proceeded outside to the area of the monitoring wells along the northwestern section of the property. An oil/water interface probe was used to measure the depth to water and oil product thickness in three of the monitoring wells. Depth to water in the southernmost 4-inch monitoring well was 10.26 feet below the top of the PVC casing, and a product thickness of 0.04 feet was measured. Product thickness increased going northward to the second 4-inch monitoring well (0.99

feet) and to the 2-inch monitoring well (4.26 feet) near the concrete pad in front of the back door. Headspace readings in these wells ranged from 3 - 10 ppm.

5.3 Contaminants of Concern

The chemical contaminants of concern are total petroleum hydrocarbons (TPHs). See SAP Table 2, Contaminants of Concern. Quality control acceptance limits and quantitation limits, for some analytical methods, are listed in Tables 1-7 of the *EPRB Generic QAPP.* QC and method quantitation limits for other methods are addressed in Section 12.2.2 of the *EPRB Generic QAPP*.

5.4 Other Target Analytes

No other contaminants of concern will be monitored during this phase of sampling activities.

6.0 Project Description and Schedule

EPA, U.S. EPA Office of Environmental Measurement and Evaluation (OEME) and START personnel will mobilize to the site on 20 November 2013 to begin field data collection activities, including advancing soil borings inside and outside of the QAI building, and along the east side of the Rintec building. START personnel will collect up to 50 subsurface soil samples based on field screening results, visual observations, and/or olfactory criteria. The soil samples will be submitted to the EPA OEME laboratory for oil identification analysis. Product and groundwater samples may also be collected for oil identification analysis. Samples will be delivered to OEME Laboratory by START personnel.

6.1 Schedule and Time Line

On 20 November 2013, EPA and START personnel will mobilize to the site to mark out the boring locations outside of the QAI and Rintec buildings, and inside of the back room of the QAI building (see Figure 3). START and OEME personnel will advance up to 20 borings and collect up to 50 subsurface soil samples using a small track-mounted or Geoprobe® (outside borings) and a hand-operated pneumatic hammer (inside borings). During soil classification and sampling activities, START will conduct ambient air monitoring using a MultiRAE Plus PID and a CGI/O_2 meter.

7.0 Project Quality Objectives

7.1 Project Objectives

Sufficient data will be obtained from a representative number of samples to support defensible decisions by the EPA and to determine whether further actions by EPRB are necessary at the site.

The following project objectives apply to the site investigation:

☒ To determine whether a removal action is warranted and if so whether the response should be classified as an emergency, time-critical, or non-time critical removal action.

☒ To rapidly assess and evaluate the urgency, magnitude, extent and impact of a release, or threatened release, of hazardous substances, pollutants or contaminants, and their impact on human health and/or the environment.

☐ To assess air quality to determine the level of personal protective equipment that must be used by site workers and to identify safety zones at the site.

☐ To assess air quality to determine if residents or site personnel need to be evacuated.

☒ To supply ATSDR or others with information about the nature and magnitude of any health threat and to support subsequent public health advisories.

☒ To determine a remedy to eliminate, reduce, or control risks to human health and the environment and to support an "Action" decision memorandum documenting the identified removal approach.

☒ To categorize waste material to support timely transportation and disposal decisions.

☐ To provide Hazardous Ranking System data and information.

☐ To identify potentially responsible parties.

☒ To support a "Closure" decision memorandum, when removal site evaluation is terminated.

7.2 Measurement and Performance Criteria

Generic measurement and performance criteria described in Table 7-2 of the *EPRB Generic QAPP* will be used to ensure that data are sufficiently sensitive, precise, accurate, and representative to support site decisions.

7.3 Decision Statements

Refer to Table 7-1 of the *EPRB Generic QAPP*.

8.0 Sampling Design

Subsurface soil samples, and possibly product/groundwater samples will be collected from the site. START and OEME personnel will advance up to 20 borings and collect up to 50 subsurface soil samples using a small track-mounted or Geoprobe® (outside borings) and a hand-operated pneumatic hammer (inside borings). Soil borings will be advanced to the water table [approximately 12 feet below the ground surface (bgs)]. Additional soil samples may be collected based on field screening results, visual examination, and/or olfactory criteria. Product and groundwater samples may be collected based on the same criteria as the soil samples or per OSC designation. Soil and product/groundwater samples collected will be submitted to EPA NERL for oil identification analysis.

9.0 Sampling Procedures

9.1 Sampling Standard Operating Procedures

The following Standard Operating Procedures (SOPs) will be used for the site evaluation:

- WSI/ S3-001 - Weston/START SOP for Surface and Subsurface Soil Sampling
- WSI/ S3-002 - Weston/START SOP for Groundwater and Drinking Water Sampling
- WSI/ S3-005 - Weston/START SOP for Operation of the Geoprobe® Systems Soil Boring Machine
- WSI/ S3-018 - Weston/START SOP for PID-MultiRAE (Multi-Gas Monitor with VOC Detection and LEL) RAE Model PGM-50 Multi-Gas Monitor (MultiRAE)
- WSI/ S3-020 - Weston/START SOP for Trimble™ GeoXT GeoExplorer 2008® Series Global Positioning System

On 20 November 2013, START, EPA, and OEME personnel will mobilize to the site and mark out proposed boring locations. The OEME Geoprobe® crew will advance borings outside of the buildings to a depth of approximately 12 feet bgs or until the water table is encountered. Four-foot-long macrocores will be used during advancement. The START crew will advance borings inside of the QAI building using a pneumatic hammer. Borings inside the building will also be advanced 12 feet bgs or until the water table is encountered or until refusal is encountered.

The OEME and START drilling crews will deliver the macrocores to the START soil classifier. Each macrocore will be labeled with the following information: top and bottom of core, sample number, and depth interval. The macrocore liners will be placed on a table covered with polyethylene (poly) sheeting. The markings on the macro-core (sample number and depth interval) will be recorded on Field Boring Data Sheets.

The vinyl end caps will be removed from the macro-core liners and the open ends of the liner screened using a photoionization detector (PID) and/or a flame ionization detector (FID). These readings will be recorded on the Field Boring Data Sheets. The macrocore will then be placed in a horizontal position on a macro-core liner holder which is clamped securely to the table. The macrocore liner will be cut using a liner cutting tool and screened along its entire length using a PID. This reading will be then recorded on the Field Boring Data Sheet.

The soil within the macrocore liner will be visually inspected, and the amount of recovery measured. The amount of recovery will be divided into four equal sections, each section representing a 1-foot interval, and the four sections will be marked on the macro-core liner with a sharpie. The top layer of the soil along the horizontal will be scraped using a clean sampling scoop or stainless steel knife to expose the true nature of the soil.

The soil classifier will describe the soil using the Burmister Soil Classification System. During the classification process, any discrete layers within the soil will be measured. Soil description (color, texture, materials, moisture content, odors, etc.) will be recorded on the Field Boring Data Sheet.

After the completion of soil description, soil samples will be collected based on field screening results, visual observations, and/or olfactory criteria. Soil samples will be collected in 4 oz glass jars

and groundwater samples will be collected in two 1-Liter glass amber jars. Oil product samples will be collected in one 40-mL glass amber VOA vial.

The sample number, collection date, and collection time will be written on the container tops (jar lids). The sample collection date and times will also be recorded on the Field Boring Data Sheets.

After the samples are placed in jars, the jars will be placed in re-sealable plastic bags and stored on ice in a cooler. Any access soil will be placed back into the boring. The macrocore sleeves will be cut into smaller sections and disposed of in accordance with the site-specific Health & Safety Plan.

9.2 Confirmatory Sampling

All of the subsurface soil and product/groundwater samples will be submitted to the EPA OEME Laboratory for oil identification analysis.

9.3 Decontamination Procedures

For the most part, decontamination procedures are described in the individual sampling SOPs listed above in Section in 9.1. General decontamination procedures are described in Section 9.6 of the *EPRB Generic QAPP*.

The collection of subsurface soil samples will involve using non-dedicated equipment such as hand augers. Equipment will be decontaminated before and after use at each sampling location. Specific decontamination procedures are described in the sampling SOPs. General procedures for decontaminating equipment are as follows:

- A physical removal technique will be used to remove any gross contamination present on the equipment. Typically, paper towels and brushes will be used for this purpose.
- After removal of gross contamination, equipment will be washed with a non phosphate detergent solution (such as a 2% liquid Nox^{TM} and tap water solution). The washed equipment will be rinsed with tap water (typically from a garden sprayer) to remove all the soap solution.
- After removal of gross contamination, equipment will be rinsed with isopropanol.
- The equipment will be rinsed with de-ionized water from a sprayer or squeeze bottle and allowed to air dry completely.
- The equipment will be visually inspected.

The effectiveness of the decontamination procedure is documented through the use of equipment rinsate blanks, which will be collected at a frequency of once per day per matrix, unless specified differently by the OSC.

Proper personal protection will be worn during decontamination procedures as prescribed in the site-specific health and safety plan. Decontamination solutions generated during the equipment

decontamination process will be containerized and disposed off-site in accordance with state and federal regulations.

10.0 Sample Handling, Tracking, and Custody Procedures

All samples will be identified, handled, shipped, tracked, and maintained under chain of custody in accordance with *EPRB Generic QAPP* Section 10.

11.0 Field Analytical Methods and Procedures

11.1 Field Analytical Methods and Standard Operating Procedures

Not applicable.

11.2 Field Testing Laboratory

Not applicable.

11.3 Screening/Confirmatory Analyses

Not applicable.

12.0 Fixed Laboratory Analytical Methods and Procedures

12.1 Fixed Laboratory Methods and Standard Operating Procedures

The following procedures and methods will be used by the laboratory:

- EIASOP-MISCOILID3 Petroleum Oil IDs by GC

12.2 Fixed Laboratory

The following laboratory will be used for laboratory analysis:

U.S. EPA New England OEME
11 Technology Drive
North Chelmsford, MA 01863-2431
(888) 372-7341 or (617) 918-8300

13.0 Quality Control Activities

13.1 Field Quality Control

Field QC samples will be collected and analyzed for this project at the frequency described in *EPRB Generic QAPP*, Table 13-1. The number of QC samples collected for each analytical parameter and concentration level are listed in SAP Table 4, Field Quality Control Summary.

13.2 Analytical Quality Control

QC for analytical procedures will be performed at the frequency described in *EPRB Generic QAPP*, Table 13-2. In addition, method-specific QC requirements will be used to ensure data quality.

13.3 Performance Evaluation Samples

No Performance Evaluation (PE) samples will be analyzed.

14.0 Secondary Data Requirements

EPRB only uses data which have been directly generated during the site activity to support site decisions. EPRB does not use secondary data to make regulatory site decisions, such as whether a site meets National Contingency Plan (NCP) criteria for a removal response. However, historical site information is routinely used during preliminary assessments and site investigations to help define the scope of removal activities. When used, EPRB will ensure that these data are of known and documented quality.

15.0 Documentation, Records, and Data Management

Documentation, record keeping, and data management activities will be conducted in accordance with the *EPRB Generic QAPP*, Section 15.

16.0 Quality Assurance Assessment and Corrective Actions

One field audit may be conducted during the early phase of a long-term response activity. Field sampling and field analytical procedures may be assessed for conformance with procedures described in the *EPRB Generic QAPP* and with this site-specific SAP. If a field audit is conducted, findings will be documented in a report to management. Corrective actions in response to any audit findings will be initiated, implemented and checked according to the *EPRB Generic QAPP*, Section 16. Since this is a short-term sampling event, a field audit as previously described will not be conducted.

17.0 Reports to Management

Reports to management will be written and distributed in accordance with the *EPRB Generic QAPP,* Section 17.

18.0, 19.0 and 20.0 Steps 1, 2 and 3: Data Review Requirements and Procedures

Step 1: Data collection activities, including sample collection and data generation, will be verified in accordance with the *EPRB Generic QAPP*, Section 18**.**

Step 2: Data will be validated in accordance with the *EPRB Generic QAPP*, Section 19. Definitive data will be validated following Tier Level: I, I Plus, II

Step 3: Data will be reviewed for usability in accordance with the *EPRB Generic QAPP*, Section 20.

SAP Table 1: SAP Revision Form

Site: Turkey Brook
OSC: Mia Pasquerella

Date	Rev. #	Proposed Change to SAP/QAPP	Reason for Change of Scope/Procedures	SAP Section Superseded	Requested By	Approved By

SAP Table 2: Contaminants of Concern

(Reference Limit and Evaluation Table)

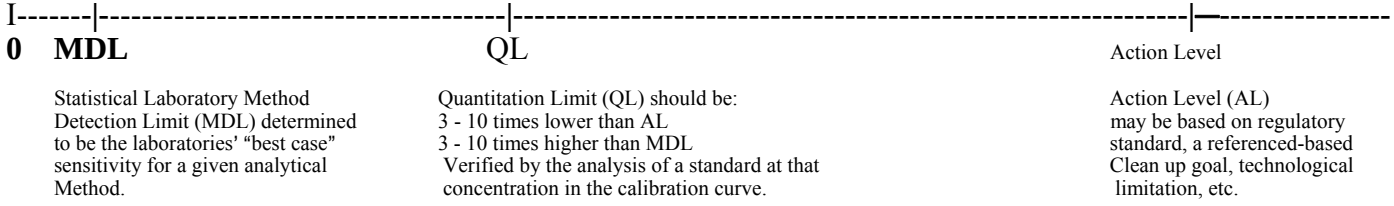
1) Complete separate table for each matrix. 2) List all Contaminants of Concern (COCs) that will be analyzed for the project.
3) Identify any Project Action Limits/Removal Action Limits (RALs). 4) List the Project Quantitation Limits/Reporting Limits required to meet project objectives.
5) List the MDLs and QLs of the published method and the MDLs and QLs achievable by the laboratory.
6) Check to make sure that the achievable laboratory QLs are less than or equal to the Project Quantitation Limits and that Project Quantitation Limits are at least two to five times less than the Project Action Levels. (Refer to EPRB Generic QAPP Section 6 for guidance.)

Matrix: Soil
Field Analytical or Fixed Laboratory Method/SOP: EIASOP-MISCOILID3, OILID, Petroleum Oil IDs by GC

Contaminant of Concern	**Project Action Level (Units) (wet or dry weight) or Removal Action Limits (RALs)**	**Project Quantitation Limit (PQLs) (Units) (wet or dry weight)** *PQLs should be 3-10 times less than the RALs*	**Analytical Method**		**Achievable Laboratory Limits**	
			Published Method MDLs[1]	Published Method QLs[1]	Laboratory MDLs[2]	Laboratory QLs[2] *Lab QLs should be less than or equal to the PQLs*
Oil (soil)	100 mg/Kg	100 mg/Kg	40 mg/Kg	40 mg/Kg	40 mg/Kg	100 mg/Kg
Oil (product)	TBD	TBD	TBD	TBD	TBD	TBD
Oil (water)	250 µg/L	250 µg/L	50 µg/L	50 µg/L	50 µg/L	250 µg/L

[1]Analytical method MDLs and QLs documented in validated methods. QLs are usually 3-10 times higher than the MDLs.
[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

Figure 6-1: Relationship of Method Detection Limits, Quantitation Limits and Action Levels



SAP Table 3: Sampling Locations and Sampling and Analysis Summary

Site: Turkey Brook Site
OSC: Mia Pasquerella

Sampling Location	Location ID Number	Matrix	Depth (Inches)	Analytical Parameter	Number of Samples (Identify field duplicates and replicates)	Sampling SOP (SAP Section 9.1)	Sample Volume	Containers (Number, size and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
TBD	TBD	Soil	TBD	Oil ID	TBD	WSI/S3-001	TBD	TBD	4°C	NA
TBD	TBD	Product (Oil)	TBD	Oil ID	TBD	WSI/S3-002	TBD	TBD	4°C	NA
TBD	TBD	Water	TBD	Oil ID	TBD	WSI/S3-002	TBD	TBD	4°C	NA

SAP Table 4: Field Quality Control Summary

Site: Turkey Brook Site
OSC: Mia Pasquerella

Matrix	Analytical Parameter	Analytical Method/ SOP Reference	No. of Sampling Locations	No. of Field Duplicate Pairs	Organic		Inorganic		No. of VOA Trip Blanks	No. of Equip. Blanks	No. of Confirmatory Samples	No. of PE Samples	Total No. of Samples to Lab
					No. of MS	No. of MSD	No. of Duplicates	No. of MS					
Soil	Oil Identification	EIASOP-INGICPMS5/ WSI/S3-001	Up to 50	3	3	3	-----	-----	1	3	-----	60	TBD
Product (Oil)	Oil Identification	EIASOP-INGICPMS5/ WSI/S3-001	TBD	TBD	TBD	TBD	-----	-----	TBD	TBD	TBD	0	TBD
Water	Oil Identification	EIASOP-INGICPMS5/ WSI/S3-001	TBD	TBD	TBD	TBD	-----	-----	TBD	TBD	TBD	0	TBD

Note:
If samples will be collected at different depths at the same location, count each discrete sampling depth as a separate sampling location/station.

MS = Matrix Spike
MSD = Matrix Spike Duplicate

REFERENCES

[1] U.S. Environmental Protection Agency, New England. 2005. Emergency Planning and Response Branch, Generic Program Quality Assurance Project Plan. 16 June.

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Appendix A

Site Location Map
Site Diagram
Proposed Soil Boring Locations

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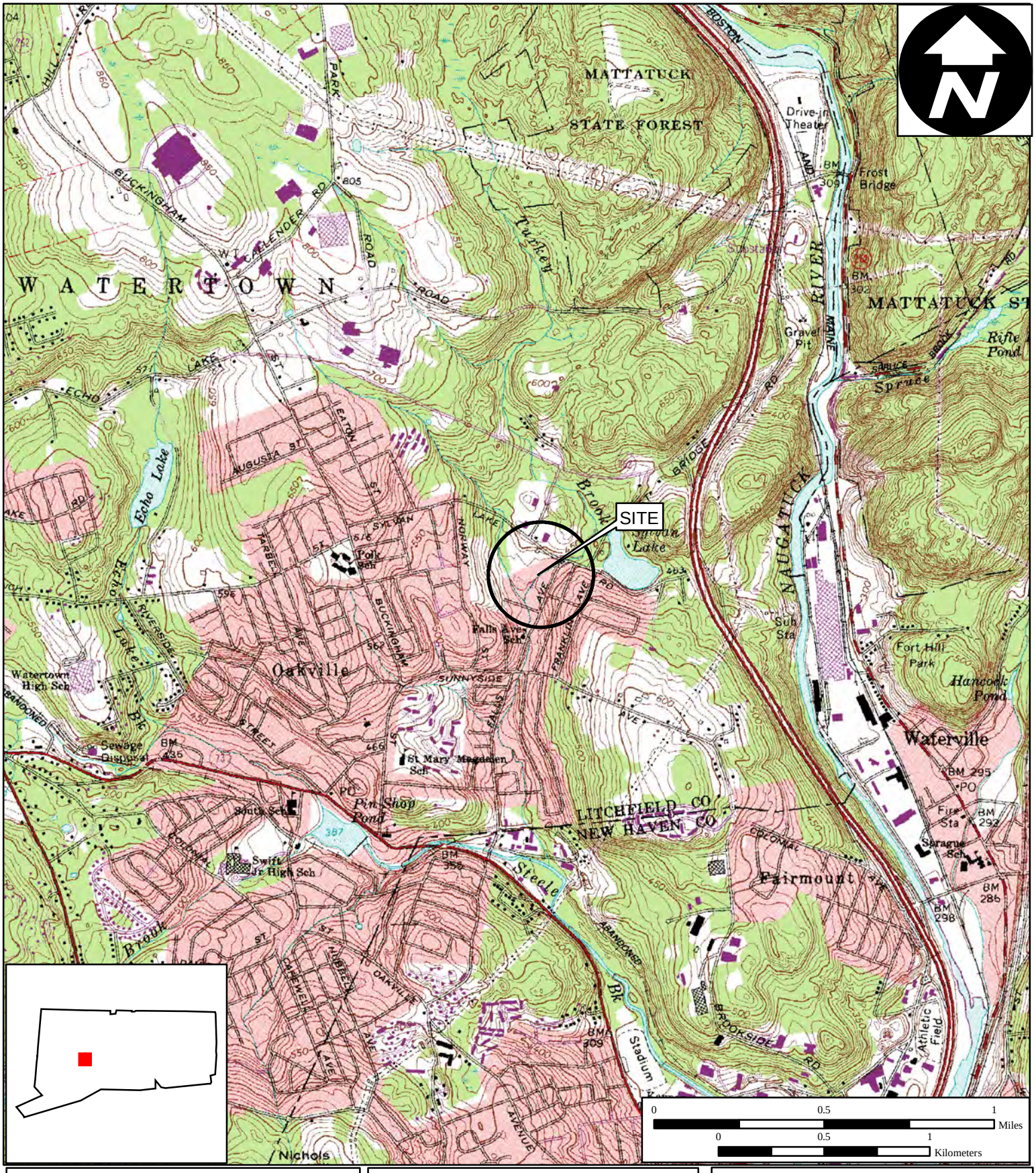


Figure 1

Site Location Map

Turkey Brook Site
20 McLennan Drive
Oakville, Connecticut

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	13-09-0009
Created by:	B. Mace
Created on:	11 November 2013
Modified by:	
Modified on:	

Data Sources:
Topos: MicroPath/USGS
Quadrangle Name: Waterbury, CT
All other data: START

E:\Ct_gis\Turkey Brook\MXDs\Figure 1.mxd

Figure 2

Site Diagram

Turkey Brook Site
20 McLennan Drive
Oakville, Connecticut

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	13-09-0009
Created by:	B. Mace
Created on:	11 November 2013
Modified by:	
Modified on:	

Legend

- Approximate Site Boundary
- Turkey Brook

N

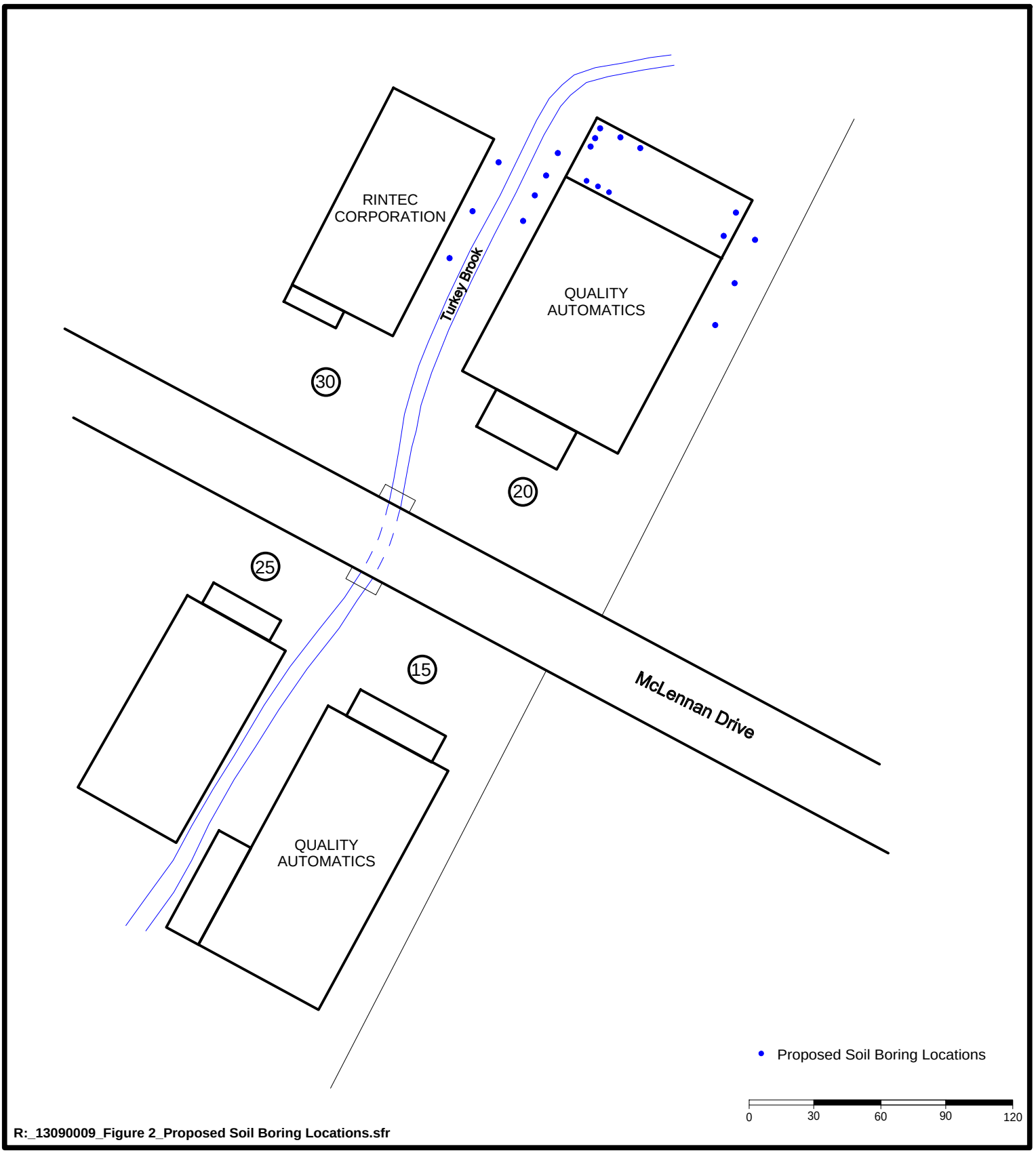
0 50 100 Feet

Data Sources:

Imagery: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP
Topos: MicroPath
All other data: START

WESTON SOLUTIONS

E:\Ct_gis\Turkey Brook\MXDs\Figure 2.mxd



R:_13090009_Figure 2_Proposed Soil Boring Locations.sfr

Figure 3

Proposed Soil Boring Locations
Turkey Brook Site
Oakville, Connecticut

EPA Region I
Superfund Technical Assessment
and Response Team (START III)
Contract No. EP-W-05-042

TDD No.:	01-13-09-0009/0912
Created by:	George Mavris
Created on:	20 September 2011
Modified by:	
Modified on:	

Data Sources:
SURFER Ver 8

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Appendix B

EPA New England DQO Summary Form

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A separate Form should be completed for each sampling event. Refer to Attachment A for instructions on completing this form, Attachment B for a complete list of the parameter codes and Attachment C for an example of a completed form.

1. EPA Program: TSCA (CERCLA) RCRA DW NPDES CAA
Other:_____
Projected Date(s) of Sampling___18-22 November 2013__
EPA Site Manager_Mia Pasquerella_____
EPA Case Team Members_____
_____
_____

Site Name__Turkey Brook Site_____
Site Location__Oakville, Connecticut_____
Assigned Site Latitude/Longitude_41° 35' 54.01" N 73° 04' 32.00" W_
CERCLA Site/Spill Identifier No. 01 _____ _____(Include Operable Unit)
Phase: ERA SA/SI pre-RI RI (phase I, etc.) FS RD RA post-RA (circle one) Other:___PASI_____

2. QAPjP Title and Revision Date_____
_____
_
Approved by:_____Date of Approval:_____
Title of Approving Official:_____Organization*:_____
*If other than EPA, record date approval authority was delegated:_____

EPA Oversight Project (circle one) Y (N)
Confirmatory Analysis for Field Screening Y (N)
Are comparability criteria documented? Y (N)
Type of EPA Oversight (circle one) PRP or FF
Other:_____
If EPA Oversight or Confirmatory: % splits_____

3. a.	Matrix Code[1]	SO							
b.	Parameter Code[2]	Oil ID							
c.	Preservation Code[3]	5							
d.	Analytical Services Mechanism	NERL							
e.	No. of Sample Locations	50							
	Field QC:								
f.	Field Duplicate Pairs	3							
g.	Equipment Blanks	0							
h.	VOA Trip Blanks	0							
I.	Cooler Temperature Blanks	1							
j.	Bottle Blanks	0							
k.	Other:_____ _____								
l.	PES sent to Laboratory	0							
	Laboratory QC:								
m.	Reagent Blank	0							
n.	Duplicate	0							
o.	Matrix Spike	0							
p.	Matrix Spike Duplicate	0							
q.	Other:_____ _____								

4. Site Information
Site Dimensions___0.65 acres_____
List all potentially contaminated matrices__soil, groundwater_____
Range of Depth to Groundwater_____unknown_____
Soil Types: Surface (Subsurface) Other:_____
Sediment Types: Stream Pond Estuary Wetland Other:_____ Expected Soil/Sediment Moisture Content: High

When multiple matrices will be sampled during a sampling event, complete Sections 5-10 for each matrix. Matrix Code[1]_____

5. Data Use (circle all that apply) (Site Investigation/Assessment) PRP Determination Removal Actions
Nature and Extent of Contamination Human and/or Ecological Risk Assessment Remediation Alternatives

Engineering Design Remedial Action
Post-Remedial Action (quarterly monitoring) Other:_____
Draft DQO Summary Form 11/96

6. Summarize DQOs:_____ The objectives of this sampling event are to conduct additional sampling investigations to characterize the horizontal and vertical extents of contamination, to determine if any additional source areas of contamination exist, and determine if further actions may be required at the site._____

Complete Table if applicable

COCs	Action Levels	Analytical Method-Quantitation Limits
Oil ID	100 mg/Kg	40 mg/Kg

7. Sampling Method (circle technique) Bailer Low flow pump (Region I method: Yes No) Peristaltic Pump
Positive Displacement Pump ~~Faucet or Spigot~~ Other:_____
Split Spoon Dredge Trowel Other: Macrocore_____

Sampling Procedures (SOP name, No., Rev. #, and date)_____
List Background Sample Locations_____
Circle: Grab or Composite
"Hot spots" sampled: Yes No

8. Field Data (circle) ORP pH Specific Conductance Dissolved O_2 Temperature Turbidity
Other:_____

9. Analytical Methods and Parameters

Method title/SOP name	Method/SOP Identification number	Revision Date	Target Parameters (VOA, SV, Pest/PCB, Metals, etc.)
Petroleum Oil Identification	MISCOILID3		Oil ID

10. Validation Criteria (circle one) 1. EPA New England Environmental Data Review Program Guidance
2. Other Approved Validation Criteria:_____
Validation Tier (circle one) I I Plus II
Company/Organization Performing Data Validation_____ Prime or Subcontractor (circle one)

11. Company Name Weston Solutions, Inc._____ Contract Number EP-W-05-042_____
Contract Name (e.g. START, RACS, etc.) START_____ Work Assignment No. 01-13-09-0009_____
Person Completing Form/Title Bonnie Mace/Proj Scientist_____ Date of DQO Summary Form Completion 11/13/13_____

Matrix Codes[1] - Refer to Attachment B, Part I
Parameter Codes[2] - Refer to Attachment B, Part II

Preservation Codes[3]

1.	HCl to pH ≤ 2	7.	$K_2Cr_2O_7$
2.	HNO_3	8.	Freeze
3.	$NaHSO_4$	9.	Room Temperature (avoid excessive heat)
4.	H_2SO_4	10.	Other (Specify)
5.	Cool @ 4°C (± 2°)	N.	Not preserved
6.	NaOH		

* - To supplement Matrix Codes and/or Parameter Codes contact the QA Unit

Appendix C

Superfund Performance Evaluation Sample Index

For EPA PE Samples call:

Leo Corben

617.918.8630

or

Steve Stodola

617.918.8634

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2011 SUPERFUND PERFORMANCE EVALUATION SAMPLE INDEX

2011 SUPERFUND PERFORMANCE EVALUATION SAMPLE INDEX (continued)

2011 SUPERFUND PERFORMANCE EVALUATION SAMPLE INDEX (concluded)